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Partial Intestinal Obstruction Caused by Left Diaphragmatic Hernia: A Case Report

Rigel K. Paat,[1] Adrian Tangkilisan,[1] Audi Pirade[2]

[1]Division of Thoracic and Cardiovascular Surgery, Department of General Surgery, Faculty of Medicine, Universitas Sam Ratulangi, Prof. Dr. R. D. Kandou Hospital, Manado, Indonesia
[2]Department of Surgery, Faculty of Medicine, Universitas Sam Ratulangi, Manado, Indonesia
Email: audipirade@gmail.com
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Abstract: Diaphragmatic hernia in adults is a rare but potentially serious condition that often presents with non-specific gastrointestinal and respiratory symptoms. This case highlights a left-sided diaphragmatic hernia complicated by partial intestinal obstruction. We reported a 54-year-old male presented with a one-week history of progressive abdominal bloating and intermittent abdominal pain, accompanied by nausea but no vomiting or fever. Bowel movements and flatus were present. In examination, he was hemodynamically stable with abdominal distension and positive bowel sounds. Nasogastric tube drainage produced greenish fluid. Digital rectal examination showed normal stool without blood or mucus. Chest X-ray suggested a left diaphragmatic hernia, and abdominal X-ray revealed partial bowel obstruction without signs of pneumoperitoneum. Laboratory findings were within normal limits, except for mild hypokalemia (K^+ 3.3 mmol/L). A diagnosis of partial mechanical intestinal obstruction due to a left diaphragmatic hernia was made. The patient underwent an urgent non-contrast abdominal CT followed by combined laparotomy and thoracotomy. Intraoperatively, a diaphragmatic defect (3×3 cm and 10×10 cm) with adhesions between the left lung and diaphragm was identified. Adhesiolysis was performed, and the defect was repaired using non-absorbable sutures, followed by diaphragmatic plication and chest tube insertion. In conclusion, this case underscores the importance of including diaphragmatic hernia in the differential diagnosis of adult patients with persistent abdominal symptoms. Timely imaging and a multidisciplinary surgical approach enabled resolution of obstruction and definitive repair, preventing serious complications. In conclusion, early recognition and appropriate surgical management are key to optimizing outcomes in adult diaphragmatic hernia with bowel involvement.
Keywords: diaphragmatic hernia; intestinal obstruction

INTRODUCTION

Diaphragmatic hernia is the protrusion of abdominal organs into the thoracic cavity due to a defect in the diaphragm structure. Diaphragmatic hernia in adults is a rare but potentially serious condition, often presenting with nonspecific gastrointestinal and respiratory symptoms. This condition is typically congenital, but may also occur acquired (acquired) in certain cases.[1]

The reported incidence of diaphragmatic hernia ranges from 0.8 to 5 per 10,000 live births. In acquired cases, diaphragmatic hernia usually occurs after blunt or sharp trauma, which causes diaphragmatic rupture followed by herniation of intra-abdominal organs. However, acquired diaphragmatic hernias can also occur spontaneously or as a result of certain iatrogenic procedures.[2] Although rare, acquired diaphragmatic hernias can be life-threatening, especially when accompanied by intestinal incarceration and strangulation, with reported mortality rates reaching up to 31% overall.[3]

This report highlights a case of left-sided diaphragmatic hernia accompanied by partial intestinal obstruction.

CASE REPORT

A 54-year-old man presented with complaints of abdominal distension that had been felt one week before admission to the hospital. The complaints were accompanied by intermittent abdominal pain that was getting worse. The patient reported nausea without vomiting and denied having a fever. The patient was still able to pass gas and had his last bowel movement (BM) in the morning, with normal consistency and color (light brown). There was no history of BM resembling goat droppings or pencil-like stools. The patient reported intermittent shortness of breath. There were no urinary complaints. The patient had previously sought treatment at Siloam Sonder Hospital and was then referred to Prof. Dr. R. D. Kandou Hospital for further management.

In initial examination, the patient's general condition was fair, with compos mentis consciousness. Vital signs were stable: blood pressure 120/70 mmHg, pulse 90 beats per minute, temperature 36°C, respiratory rate 20 breaths per minute, and oxygen saturation 96%. A nasogastric tube (NGT) was in place with greenish fluid production. The head examination was within normal limit. In the respiratory system, chest movement was symmetrical, vesicular breath sounds were present without rales or wheezing, and percussion and palpation results were symmetrical. Heart sounds I and II were normal, regular, without murmurs or gallops. The abdomen was distended, with positive bowel sounds, tympanic percussion, and no tenderness or percussion pain. Abdominal palpation shows a soft abdominal wall without tenderness. The extremities are warm with capillary refill time <2 seconds.

Rectal examination showed good anal sphincter tone, collapsed rectal ampulla, smooth mucosa, no palpable mass or circumferential tenderness. Stool was palpable on digital rectal examination without mucus or blood. Previous radiological examination at Siloam Sonder Hospital included a chest X-ray (July 10, 2025) suggesting left diaphragmatic hernia with an inaccurate assessment of heart size. A plain abdominal X-ray in three positions (July 8, 2025) suggested partial intestinal obstruction without signs of ascites or pneumoperitoneum. Left scoliosis was also noted in the lumbar region.

Laboratory results in July 11, 2025 showed hemoglobin 13.9 g/dL, leukocytes 9,600/µL, hematocrit 39.4%, platelets 358,000/µL, MCV 86.8 fL, MCH 30.7 pg, and MCHC 35.4 g/dL. Hemostasis function was normal with PT 12.8/14.0 seconds and INR 0.92/1.04. Liver function was within normal limits (AST 20 U/L, ALT 11 U/L), and kidney function was good (urea 39 mg/dL, creatinine 0.6 mg/dL, eGFR 104 mL/min/1.73m²). Electrolytes showed sodium 136 mmol/L, potassium 3.3 mmol/L, chloride 92 mmol/L, and serum osmolality 284 mOsm/kg. Blood glucose level was 94 mg/dL. Hepatitis virus and HIV serology were negative.

The working diagnosis was established as partial mechanical intestinal obstruction due to left diaphragmatic hernia. The patient was scheduled for an emergency non-contrast abdominal CT scan and underwent surgical intervention.

Figure 1. Chest X-ray showing suspected left diaphragmatic hernia

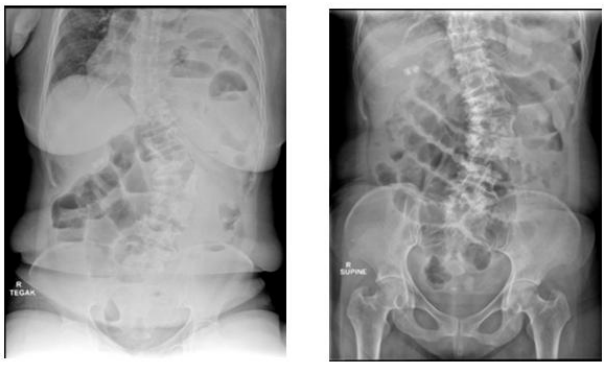

Figure 2. Abdominal photograph showing partial intestinal obstruction without signs of ascites or pneumoperitoneum

The Digestive and Thoracic-Cardiovascular Surgery Team performed a laparotomy with adhesiolysis, as well as a thoracotomy with diaphragmatic plication and the placement of a chest tube using the water seal drainage (WSD) system.

During the thoracotomy procedure, adhesions were found between the left lower lobe of the lung and the diaphragm, which were then treated with adhesiolysis accompanied by bleeding control. The thoracic cavity was washed with sterile saline solution. Two defects were identified in the left diaphragm, measuring 3x3 cm and 10x10 cm, respectively. Adhesiolysis was performed using sharp and blunt techniques, followed by repair of the diaphragmatic rupture using non-absorbable sutures (Premilene 1), accompanied by diaphragmatic plication. Postoperative evaluation showed no evidence of leakage. Next, a 28 Fr chest tube was placed in the left hemithorax and connected to the WSD system. The operation was then continued by the digestive surgery team.

DISCUSSION

Diaphragmatic hernia in adults, although more commonly found in children, remains an important clinical entity that can cause mechanical intestinal obstruction. The etiology of diaphragmatic hernia in adults is divided into two categories: congenital (developmental defect of the diaphragm present at birth) and acquired, usually due to blunt or penetrating trauma. The defect most commonly occurs on the left side due to the protective effect of the liver on the right side. In addition to trauma, some reports also highlight associations with genetic factors and disruptions in the retinoid pathway during diaphragm development, particularly in congenital cases.[4,5]

In this case, the patient experienced partial mechanical intestinal obstruction due to a left diaphragmatic hernia. The diagnosis was supported by radiological findings and the discovery of a diaphragmatic defect during surgery. A diagnosis of diaphragmatic hernia should be suspected when gastrointestinal symptoms are present alongside radiological findings of abdominal organ displacement into the thoracic cavity, particularly at the site of the left diaphragmatic defect. CT-scan examinations are highly useful for mapping the extent and location of the defect prior to surgical intervention.[5,6]

The primary management of diaphragmatic hernia with intestinal obstruction complications is immediate surgical intervention. Emergency surgery is indicated to prevent intestinal ischemia and perforation. Surgical approaches may include laparotomy, thoracotomy, or a combination of both, depending on organ involvement and suspicion of intrathoracic adhesions. In cases with strong adhesions between thoracoabdominal organs, as in this patient, a combination of thoracotomy and laparotomy provides optimal access for adhesiolysis, hernia reduction, and diaphragmatic defect repair. Plication and closure of the diaphragmatic defect are recommended using non-absorbable sutures. In cases of large defects, the use of mesh (synthetic or biological) may be considered; however, in recent years, the use of biological mesh has been preferred due to its reduced risk of infection and recurrence.[7-9]

Minimally invasive surgical approaches (laparoscopy or thoracoscopy) are also increasingly being used, particularly in stable patients with small defects. However, in complex, large cases, or those with extensive adhesions, open surgery remains the gold standard. Recent studies indicate that the clinical outcomes of diaphragmatic hernia repair are generally good, with low morbidity and mortality rates when diagnosis and management are performed appropriately and a multidisciplinary team is involved in patient care. Postoperative chest tube placement is recommended to prevent complications such as hydrothorax or pneumothorax.[9-13]

CONCLUSION

The management of adult diaphragmatic hernias with intestinal obstruction requires early detection and immediate surgical intervention. Combination surgical techniques can be tailored to the patient's condition and intraoperative findings. Recent references indicate that repair with non-absorbable sutures and/or mesh provides good long-term results, as well as the importance of multidisciplinary team involvement to optimize patient clinical outcomes.

Conflict of Interest

The authors confirm no conflict of interest in this study.

REFERENCES

1. Chandrasekharan PK, Rawat M, Madappa R, Rothstein DH, Lakshminrusimha S. Congenital diaphragmatic hernia – a review. Matern Health Neonatol Perinatol. 2017;3:6. Doi: https://doi.org/10.1186/s40748-017-0045-1
2. Katukuri GR, Madireddi J, Agarwal S, Kareem H, Devasia T. Delayed diagnosis of left-sided diaphragmatic hernia in an elderly adult with no history of trauma. J Clin Diagn Res. 2016;10(4):PD04–5. Doi: https://doi.org/10.7860/JCDR/2016/17167.7638
3. Lu J, Wang B, Che X, Li X, Qiu G, He S, et al. Delayed traumatic diaphragmatic hernia: a case-series report and literature review. Medicine (Baltimore). 2016;95(32):e4362. Doi: https://doi.org/10.1097/MD.0000000000004362
4. Rivas JFG, Clugston RD. The etiology of congenital diaphragmatic hernia: the retinoid hypothesis 20 years later. Pediatr Res. 2024;95(4):912–21. Doi: https://doi.org/10.1038/s41390-023-02905-7
5. Kwag KH, Zoham MH, Brown B, Sohn A, Harrison S, Brandwein A. Late onset diaphragmatic hernia: a forgotten etiology of recurrent vomiting in the adolescent population. Pediatr Health Med Ther. 2023;14:141–6. Doi: https://doi.org/10.2147/PHMT.S414029
6. Spellar K, Lotfollahzadeh S, Sharma S, Gupta N. Diaphragmatic Hernia. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 [cited 2025 Aug 7]. Available from: http://www.ncbi.nlm.nih.gov/books/NBK536952/
7. Testini M, Girardi A, Isernia RM, De Palma A, Catalano G, Pezzolla A, et al. Emergency surgery due to diaphragmatic hernia: case series and review. World J Emerg Surg. 2017;12(1):23. Doi: https://doi.org/10.1186/s13017-017-0134-5
8. Filosso PL, Guerrera F, Sandri A, Lausi PO, Lyberis P, Bora G, et al. Surgical management of chronic diaphragmatic hernias. J Thorac Dis. 2019;11(Suppl 2):S177–85. Doi: https://doi.org/10.21037/jtd.2018.12.112
9. Giuffrida M, Perrone G, Abu-Zidan F, Agnoletti V, Ansaloni L, Baiocchi GL, et al. Management of complicated diaphragmatic hernia in the acute setting: a WSES position paper. World J Emerg Surg. 2023;18(1):43. Doi: https://doi.org/10.1186/s13017-023-00540-0
10. Matsubayashi Y, Takanashi Y, Sekihara K, Hayakawa T, Mizuno K, Kawase A, et al. Management of left traumatic diaphragmatic hernia complicated by traumatic Stanford type B aortic dissection. Gen Thorac Cardiovasc Surg Cases. 2023;2(1):89. Doi: https://doi.org/10.1186/s44215-023-00031-6
11. Mesas Burgos C, Perrone EE, Zahn K, Hedrick HL. Challenges and controversies in the surgical management of congenital diaphragmatic hernia. Semin Fetal Neonatal Med. 2025;101648. Doi: https://doi.org/10.1016/j.siny.2025.101648
12. Major EE, Chen B, Al Mahrizi AD, Ezenwanne C, Gill H, Mossolem F, et al. Minimally invasive vs. open surgical repair in traumatic diaphragmatic hernia: a systematic review of 8,990 patients. Cureus. 2025;17(4):e82371. Doi: https://doi.org/10.7759/cureus.82371
13. Baghdadi MA, Habeeb TAAM, Fiad AA, Wasefy T. Postoperative outcomes of trans-abdominal open surgical repair of traumatic diaphragmatic hernias in adults: retrospective observational study. Surg Gastroenterol Oncol. 2023. Doi: https://doi.org/10.21614/sgo-eC-532